Paving and Municipal Engineering.

VOLUME X.

TD1
.W3

INDEX.

Acetone in the Technical Analysis of Asphaltum, The Use of *Prof. S. F. Peckham.* 243
American Cities, Kinds of Pavement in 391
Apportioning Cost of Private Street Works, A Rapid Method of *Thomas Caink, C. E.* 317
Asphalt and Brick, From Cobblestone to ..... *N. P. Lewis, M. Am. Soc. C. E.* 232
Asphalt in the United States, Production of 151
Asphalt Paving in Different Cities 248
ASPHALT, RECENT DISCUSSIONS OF—
Asphalts and Bitumens ..... *Dr. Samuel P. Sadtler.* 99
What is Bitumen? ..... *Prof. S. F. Peckham.* 100
An Investigation of Utah Gilsonite ..... *Dr. William C. Day.* 104
Asphaltum, The Chemical Relations of ..... *Prof. S. F. Peckham.* 310
Asphaltum, The Use of Acetone in the Technical Analysis of *Prof. S. F. Peckham.* 243
Australian City, The Pavements of an ..... *F. A. Campbell, C. E., F. R. G. S.* 301
Barber Asphalt Paving Company, The Men Who Manage the 331
Boston, The Park System of ..... *Sylvester Baxter.* 15
Brick, From Cobblestone to Asphalt and ..... *N. P. Lewis, M. Am. Soc. C. E.* 232
Brick, Paving, Discussed by Manufacturers 23
Brick Paving from Start to Finish ..... *M. Nicholson, C. E.*
II. The Foundation 11
III. Qualities of Brick—Suggestions as to Tests 85
IV. Paving Next to Street Railway Tracks—The Finishing Touches 154
Brick Paving, New Specifications for 249
Brick Paving, Salt Glazing of 33
Bricks, Paving, Compressive Strength and Absorption of 393
Bridges, Movable, in European and American Cities 73
Chemical Relations of Asphaltum, The ..... *Prof. S. F. Peckham.* 310
Cities, a Movement for Beautifying ..... *Maj. Charles Thruston Greene.* 241
Cleaning and Watering of Streets in Paris *Alfred Perkins Rockwell, A. M., Ph. D.* 163
Cleaning, Street, Cost of in American Cities 394
Contractor's Fair Profit, The ..... *J. H. Burnham.* 158
England, Sewage Disposal in ..... *Allen Hazen.* 175
Fire Clay and Shale, Difference Between 23
Filtration of Public Water Supplies ..... *Allen Hazen.* 430
Highways, Country, Paving of ..... *Capt. W. S. Williams.* 173
Kilns, Methods of Ascertaining Temperature in 26
Laboratory, A Municipal Testing ..... *A. D. Thompson, City Engineer, Peoria.* 1
Multiple Stack Down-Draft for Paving Brick, Fire Hole of 29
Municipal Engineering, Qualifications for 386
Municipal Testing Laboratory, A. ..... *A. D. Thompson, City Engineer, Peoria.* 1
Paris, Cleaning and Watering of Streets in *Alfred Perkins Rockwell, A. M., Ph. D.* 163
Parks and Lakes, Views of, Minneapolis 308
Park System, Essential Features of a 167
Park System of Boston, The. ..... *Sylvester Baxter.* 15
Pavements of an Australian City, The ..... *F. A. Campbell, C. E., F. R. G. S.* 301
Pavement in American Cities, Kinds of 391
Paving, Asphalt, in Different Cities 248
Paving Brick Discussed by Manufacturers 23
Paving Brick, Fire Hole of Multiple Stack Down-Draft for 29

Paving and Municipal Engineering.

VOLUME X.

TD1
.W3

INDEX.

Acetone in the Technical Analysis of Asphaltum, The Use of *Prof. S. F. Peckham.* 243
American Cities, Kinds of Pavement in 391
Apportioning Cost of Private Street Works, A Rapid Method of *Thomas Caink, C. E.* 317
Asphalt and Brick, From Cobblestone to ..... *N. P. Lewis, M. Am. Soc. C. E.* 232
Asphalt in the United States, Production of 151
Asphalt Paving in Different Cities 248
ASPHALT, RECENT DISCUSSIONS OF—
Asphalts and Bitumens ..... *Dr. Samuel P. Sadtler.* 99
What is Bitumen? ..... *Prof. S. F. Peckham.* 100
An Investigation of Utah Gilsonite ..... *Dr. William C. Day.* 104
Asphaltum, The Chemical Relations of ..... *Prof. S. F. Peckham.* 310
Asphaltum, The Use of Acetone in the Technical Analysis of *Prof. S. F. Peckham.* 243
Australian City, The Pavements of an ..... *F. A. Campbell, C. E., F. R. G. S.* 301
Barber Asphalt Paving Company, The Men Who Manage the 331
Boston, The Park System of ..... *Sylvester Baxter.* 15
Brick, From Cobblestone to Asphalt and ..... *N. P. Lewis, M. Am. Soc. C. E.* 232
Brick, Paving, Discussed by Manufacturers 23
Brick Paving from Start to Finish ..... *M. Nicholson, C. E.*
II. The Foundation 11
III. Qualities of Brick—Suggestions as to Tests 85
IV. Paving Next to Street Railway Tracks—The Finishing Touches 154
Brick Paving, New Specifications for 249
Brick Paving, Salt Glazing of 33
Bricks, Paving, Compressive Strength and Absorption of 393
Bridges, Movable, in European and American Cities 73
Chemical Relations of Asphaltum, The ..... *Prof. S. F. Peckham.* 310
Cities, a Movement for Beautifying ..... *Maj. Charles Thruston Greene.* 241
Cleaning and Watering of Streets in Paris *Alfred Perkins Rockwell, A. M., Ph. D.* 163
Cleaning, Street, Cost of in American Cities 394
Contractor's Fair Profit, The ..... *J. H. Burnham.* 158
England, Sewage Disposal in ..... *Allen Hazen.* 175
Fire Clay and Shale, Difference Between 23
Filtration of Public Water Supplies ..... *Allen Hazen.* 430
Highways, Country, Paving of ..... *Capt. W. S. Williams.* 173
Kilns, Methods of Ascertaining Temperature in 26
Laboratory, A Municipal Testing ..... *A. D. Thompson, City Engineer, Peoria.* 1
Multiple Stack Down-Draft for Paving Brick, Fire Hole of 29
Municipal Engineering, Qualifications for 386
Municipal Testing Laboratory, A. ..... *A. D. Thompson, City Engineer, Peoria.* 1
Paris, Cleaning and Watering of Streets in *Alfred Perkins Rockwell, A. M., Ph. D.* 163
Parks and Lakes, Views of, Minneapolis 308
Park System, Essential Features of a 167
Park System of Boston, The. ..... *Sylvester Baxter.* 15
Pavements of an Australian City, The ..... *F. A. Campbell, C. E., F. R. G. S.* 301
Pavement in American Cities, Kinds of 391
Paving, Asphalt, in Different Cities 248
Paving Brick Discussed by Manufacturers 23
Paving Brick, Fire Hole of Multiple Stack Down-Draft for 29

Paving, Brick, from Start to Finish.....*M. Nicholson, C. E.*
II. The Foundation..... 11
III. The Qualities of Brick—Suggestions as to Tests..... 85
IV. Paving Next to Street Railway Tracks—The Finishing Touches..... 154
Paving Brick Industry in 1895, Commercial Phases of the..... 41
Paving Brick, New Specifications for..... 249
Paving Brick, Repressing..... 30
Paving Brick, Testing, Standard Specifications and Methods of..... 35
Paving Brick, Salt Glazing of..... 33
Paving Bricks, Compressive Strength and Absorption of..... 393
Paving, Good, is Essential to the Success of a City, Why
J. W. Howard, B. L., C. E. 227, 305
Paving of Country Highways.....*Capt. W. S. Williams* 173
Paving Statistics, Diagram of..... 346
Repressing Paving Brick..... 30
Road Making, Specifications for..... 324
Salt Glazing of Paving Brick..... 33
Sewage Disposal in England.....*Allen Hazen.* 175
Sewers and Water Mains, New Formula for the Flow in
W. S. Crimp and C. E. Bruges. 322
Sewer Discharge and Velocity.....*Albert Wolheim, Assoc. M. Inst. C. E.* 251
Sewer Statistics, Diagrams of..... 253
Shale, Difference Between Fire Clay and..... 23
Specifications and Methods of Testing Paving Brick, Standard..... 35
Specifications for Road Making..... 324
Statistics, Paving, Diagram of..... 346
Statistics, Sewer, Diagrams of..... 253
Street Cleaning in American Cities, Cost of..... 394
Streets in Paris, Cleaning and Watering of
Alfred Perkins Rockwell, A. M., Ph. D. 163
Testing Laboratory, A Municipal.....*A. D. Thompson, City Engineer, Peoria.* 1
Typhoid Fever Statistics from the Principal Cities of the United States and Europe..... 426
Water Supplies, Animal and Vegetable Growths Affecting....*Dr. A. R. Leeds.* 428
Water Supplies, Fecal Bacteria in.....*Dr. J. N. Hurty, C. C. Brown, C. E.* 429
Water Supplies, Filtration of.....*Allen Hazen.* 430
Water-Works Association, Meeting of..... 427
BIOGRAPHICAL SKETCHES AND PORTRAITS—
Bowen, H. C..... 342
Bristol, F. J..... 340
Burnham, J. H., Portrait..... 163
Charles Carroll Brown, Portrait..... 391
Greene, Charles Thruston, Portrait..... 243
Greene, Col. Francis V., Portrait..... 333
Henry, P. W., Portrait..... 339
Howard, J. W., Portrait..... 231, 308
Lewis, N. P., Portrait..... 241
Peckham, S. F., Portrait..... 317
Pingree, H. S., Portrait..... 327
Pingree, Hazen S., Portrait..... 328
Richardson, Clifford, Portrait..... 343
Robinson, Chas. K., Portrait..... 336
Rock, J. C., Portrait..... 337
Thompson, A. D., Portrait..... 11
Williams, W. S., Portrait..... 175

CEMENT AND ITS USE.

American Portland Cement, A New Brand of..... 110
Analysis and Tests of Materials by Cement Manufacturers
R. M. Lesley. 187
Cement Affected by Freezing..... 399
Cement, Hydraulic, Topical Discussions on..... 347
Cement Industry in America, The. 188
Cement Industry, German..... 263
Cement, Sand..... 261
Cement Sidewalks..... 395
Cement Specifications, Tensile Strength in..... 257
Cements, The Best Comparative Tests of..... 261
Cement, The Use of..... 113
Concrete, The Proper Consistency of After Mixing..... 188
Concrete, Proportions of the Constituents of
John W. Sandeman, M. Inst. C. E. 255
Details of The Simpler Tests of Cement
L. C. Sabin, Assoc. M. Am. Soc. C. E. 44, 106, 168
German Cement Industry..... 263

Hydraulic Cement, Topical Discussions on 347
Physical Tests and Laboratory Practice, Digest of..... 113
Portland Cement, American and European 397
Portland Cement, Tensile Strength of a New Brand of..... 350
Portland Cement, A Suggestion Regarding the Manufacture of..... 112
Portland Cement, What Can Be Done With a Barrel of..... 351
Sand Cement..... 261
Sidewalks, Cement..... 395
Sidewalks, Cement, Defective Surface of 263
Sidewalks, Concrete..... 111
Slag Cement in Germany..... 350
Specifications, Standard, for Cement, Criticism of 111
Testing and Analysis of Cements *W. Elwood Snyder.* 46
Tests of Cements, The Best Comparative..... 261

ANSWERS TO QUESTIONS.

Artificial and Natural Stone Curbs 266
Asphalt Pavements, Cost of, in Different Cities..... 355
Asphalt Pavements in America, Total of..... 354
Asphalt Surfacing, How to Do Vertical Work in..... 351
Asphaltic Cement, Preparation of, in Binder Course..... 354
Bicyclists and Good Pavements.... 353
Bituminous Rock Pavements, The Laying of 195
Brick and Macadam Pavements.... 195
Brick-Paved Streets, Street Car Rails on 191
Brick Pavements, Peculiar Noise on 354
Brick Pavements, Rumbling Noise of..... 400
Concrete, Setting Curbs in..... 402
Concrete Should be Mixed, How... 264
Concrete Sidewalks and Curbs, Strengthening of..... 352
Contracts, Advertising for Bids Without Awarding..... 401
Cross-Walks, Square or Beveled Joints for..... 264
Curbs, Artificial and Natural Stone 266
Curbs, Sandstone for 403
Curbs, Setting in Concrete..... 402
Machinery for Ramming Pavements 355
Novaculite..... 403
Paint for a Crematory Smoke Stack 196
Patent Sidewalk Pavements..... 192
Pavements, Brick and Macadam... 195
Pavements, Machinery for Ramming 355
Paving Work, When to Begin and Stop 267
Paving Brick, Proportion of Usable 352
Portland Cement, Importation of... 353
Road Rollers, Cost of Operating... 194
Sandstone for Curbs..... 403
Scoria Block Along Street Rails, Use of 267
Sidewalks in New York, Defective. 194
Sidewalk Pavements, Patent..... 191
Square or Beveled Joints for Cross Walks 264
Street Car Rails on Brick-Paved Streets..... 191
Street Corners, How to Determine the Elevations of..... 192
Street Pavements Should Have a Crown, When 265
Sweeping, Street, in New York..... 403
Traction and Loads for Vehicles on Different Roads..... 400

CURRENT INFORMATION.

A Great Opportunity for Bidders.. 275
American Water-Works Association 357
Asphalt and Brick Recommended at Racine, Wis..... 412
Asphalt Beton, An Austrian..... 418
Asphalt Block Patent Suit, An.... 54
Asphalt Contest in New Orleans, The 50
Asphalt, Crude, No Tariff on Imported 204
Asphalt in Indian Territory..... 405
Asphalt in Wilmington, Del..... 410
Asphalt Paving in Chicago, Cost of. 412
Asphalt Pavements in Berlin..... 124
Asphalt Pavement, The Utah, in Minneapolis..... 118
Asphalt Paving Specifications, New 203
Asphalt Road for Bicycles, an Elevated..... 406
Asphalt Streets, Litigation Over... 272
Asphalt, Use of Worn Brick Pavements as a Foundation for..... 126
Assessing the Cost of Paving Street Intersections..... 357
Assessment Plan, A General, for Street Improvement 270
Baltimore, An Ordinance to Facilitate Street Improvements in..... 53
Barrett Law, A Decision Affecting the..... 53
Belfast, Paving in 271
Berlin, Asphalt Pavements in..... 124
Bonds, Street Paving, Payment for 273
Brick and Asphalt Recommended at Racine, Wis..... 412
Brick in Chicago, Popularity of.... 271
Brick Paving and Granite Compared 411
Brick Paving, Some Special Work in. 404
Bridge Contract, Rights of Bidders on a 358
Brick Pavements, Use of Worn, as a Foundation for Asphalt..... 126
Brooklyn City Works Department, Division of the 123
Burlington's Brick Paved Streets.. 416
California Highway Commissioners, Instruction by..... 53
Chief Engineer of Brooklyn..... 406
Civil Engineers, Licensing of..... 274
Cleveland, Sewage Disposal at..... 200
Competition, Restriction of, Illegal 52

Connecticut, Division of Funds for Road Improvement in..... 127
Connecticut, New Roads in..... 51
Contractors in Philadelphia, Fines of 56
Creosoted Wood Block..... 407
Crushing Stone for Highway Improvements, Cost of 202
Delaying a Contractor, Liability of a City for 269
Engineering in Thirteen Cities, Cost of 274
Fifteen Years of Litigation Over a Ditch 270
Fort Wayne's Garbage Disposal Crematory 56
Garbage, Collecting, Use of Street Cars in..... 200
Garbage Disposal, Col. Waring on. 199
Garbage Disposal, Costs and Profits of 201
Garbage Disposal Crematory, Fort Wayne's 56
Good Roads in New Hampshire.... 362
Granite and Paving Brick Compared 411
Granite, Tests of, for Paving..... 361
Guaranties, Specifications and..... 127
Highway Improvements, Cost of Crushing Stone for..... 202
Illinois, Installment Payments, for Street Paving in..... 122
Lighting, Street, Cost of..... 406
Macadam and Telford Roads, Cost of 126
Maryland, Proposed Road Improvement Legislation in..... 124
Mayor, Depriving a of the Appointing Power..... 274
Meetings, Coming..... 57
Meetings, Reports of 138
Mexican Asphalt, Result of the Litigation Over..... 55
Minneapolis, The Utah Asphalt Pavement in..... 118
Municipal Engineering, An Investigation of the Cost of..... 119
Municipal Improvement Association, A Woman's..... 372
Municipal Ownership, An Instance of the Results of..... 124
Municipalities, Responsibility of, for Street Maintenance..... 123
Municipal Reports 135, 213, 285
New Hampshire, Good Roads in... 362
New Jersey, Steel Roads Proposed in..... 124
New York, A State Road Bureau for 359
New York City, Smooth Pavements for 413
New York, Proposed Road Improvement Reforms in..... 123
Omaha's Liability for Maintenance of a Street..... 51
Opinions and Recommendations of a Famous Mayor..... 197
Parking of Streets, The..... 271
Parks, Relation of, to City Life.... 406
Pavements, A Committee's Recommendations Regarding..... 360
Pavement Contracting in St. Louis, Serious Interferences with..... 54
Pavement in New York, New Wood Block..... 55
Pavement, Payment for, by a Street Railway 198
Pavements for Small Cities, Cheap. 411
Pavements, Requirements for Telford Macadam..... 405
Pavements, Smooth, for New York City..... 413
Paving, Analysis of, Wood Block... 361
Paving in Belfast..... 271
Paving Materials, Imported, Proposed Prohibition of the Use of.. 268
Paving Materials, Imported, The New York Bill Against..... 361
Paving Street Intersections, Assessing the Cost of 357
Paving, Tests of Granite for..... 361
Payment for Street Pavement, A Plan for Easier 271
Personals..... 57, 129, 204, 275, 363, 418
Physical Improvement of Cities, Public-spirited Work in Securing 56
Publications, New 126
Roads, Cost of, Macadam and Telford..... 126
Road Improvement, A New Plan for 201
Road Improvements in Connecticut, Division of Funds for..... 127
Road Improvement Legislation in Maryland, Proposed..... 124
Road Improvement, Proposed, Reforms in New York..... 123
Roads in New York, Recommendations Regarding..... 52
Road Machinery, Legislation Affecting the Sale of..... 362
Roads, Stone, in New Jersey..... 408
St. Louis, Serious Interferences with Pavement Contracting in..... 54
St. Louis, Street Sweeping in, The Block Patrol System of..... 121
San Antonio, Litigation Over the Big Sewer Contract at..... 359
Sewage Disposal at Cleveland..... 200
Sewerage Franchise in New Orleans. 417
Sewer Case, The San Antonio..... 417
Sewer Construction, Locating Y's in..... 274
Sewer Construction Rules, Some... 121
Sewer Contract at San Antonio, Litigation Over the Big..... 359
Sewers Breed Disease..... 409
Sewer System, Use of, Forbidden.. 359
Specifications, A Decision Affecting 120
Specifications and Guaranties..... 127
Specifications, New Asphalt Paving 203
Sprinkling, Legality of Taxation for Street..... 197
Steel Roads Proposed in New Jersey 124
Steel Tracks for Wagons..... 362
Street Improvement, A General Assessment Plan for 270
Street Improvements in Baltimore, An Ordinance to Facilitate..... 53
Streets in St. Louis, Better and Cleaner 269
Streets, Liability of Street Railways for Maintenance of..... 120
Street Maintenance, Responsibility of Municipalities for..... 123

Street Paving, A Plan for Easier Payment for..... 271
Street Paving Bonds, Payment for. 273
Street Paving in Illinois, Installment Payments for..... 122
Street Sprinkling, Legality of Taxation for..... 197
Street Sprinkling, Regulation of... 275
Street Sweeping, Cost of..... 121
Street Sweeping in St. Louis, The Block Patrol System of..... 121
Street Traffic, Record Table of..... 360
Streets, Unclean, Dangers from.... 415
Sweeping, Cost of Street..... 121
Suit, Discontinuance of a, of Her Majesty..... 123
Taxation for Street Sprinkling, Legality of..... 197
Telford-Macadam Pavements, Requirements for..... 405
Unprofessional 275
Utah Asphalt Pavement in Minneapolis, The..... 118
Vehicle Tax for Street Repairs.... 408
Viaduct Construction, An Illegal Contract for..... 273
Wagons, Steel Tracks for..... 362
Waring on Garbage Disposal..... 199
Water Supply, Cincinnati's, Plans for the Betterment of..... 357
Wood Block, Creosoted..... 407
Wood Block Pavement in New York, New..... 55
Wood Block Paving, Analysis of... 361

LETTERS FOR THE PUBLIC.

Asphalt Pavements, Durability of, *J. A. D.* 440
Asphalt Streets in Buffalo, Cost of Resurfacing, *E. S. Gunnell, S. J. Fields.* 283
Benefits Derived by a City From Well-Paved Streets. *J. W. Howard.* 439
Denver's City Charter and Paving Specifications...*Arthur C. Harris.* 209
Garbage Disposal Contract, San Francisco's....*Ernest McCullough* 209
Germany, New System of Road-Making in.....*A. F. Tenille.* 283
Kentucky Bituminous Sandstone *G. W. Smith.* 283
Newark, N.J., The Brick Pavements in.....*J. C. Mundy.* 210
Paving Specifications, Denver's City Charter and....*Arthur C. Harris.* 209
Road-Making in Germany, New System of.....*A. F. Tenille.* 283
San Francisco's Garbage Disposal Contract *Ernest McCullough, C. E.* 209
Water-Works, The Madison (Fla.) *J. F. LeBaron.* 284

LEGAL DECISIONS.....58, 129, 419

MACHINERY AND TRADE.

Climax Road Machinery..... 278
Furnas Pneumatic Street Sweeper. 131
Inventions, Recent.....130, 277, 421
Philadelphia, A Big Deal in..... 278
Portland Cement Works, The Vulcanite..... 206
Road Machinery, Climax..... 278
Steam Rollers, The Price of..... 278
Street Sweeper, Furnas' Pneumatic 131
Technical Education by Correspondence..... 131
Trade Notes....59, 132, 206, 279, 365, 422

THE GOOD ROADS MOVEMENT.

Good Roads Convention in New Hampshire..... 434
Good Roads Discussed by the L.A.W. 212
Good Roads Discussed from Various Points of View..... 211
Goods Roads Meetings..... 435
Meetings in Several States..... 212
Roads Discussed in Boston..... 434
Wisconsin, What Has Been Done in. 213

SELECTIONS FROM THE PRESS.

Asphalt Pavements Without Foundation, California's Experiment With..... 438
Brick Pavement, How Not to Lay.. 437
California's Experiment With Asphalt Pavements Without Foundation..... 438
England, the Use of Tar Macadam. 437
Improvement Societies, Village.... 436
Macadamized Roads, Care of..... 438
Repaving Problem, The..... 436
Roads, Macadamized, Care of..... 438
Streets for Wheelmen, Need of Smooth..... 437
Tar Macadam in England, the Use of..... 437
Value of Well-Paved Streets..... 436
Wheelman, Need of Smooth Streets for..... 437

IMPROVEMENT AND CONTRACTING NEWS.

Paving.....61, 141, 217, 287, 361, 443
Sewers 64, 145, 220, 294, 373, 449
Water-Works..67, 146, 223, 297, 376, 453
Bridges.....69, 148, 223, 298, 377, 455
Parks.....70, 149, 225, 300, 379, 457
Municipal Bonds.....71, 226
Street Lighting.....71, 150, 226, 300
Garbage Disposal, 71, 150, 225, 300, 380, 458
Street Sprinkling....1, 226, 300, 380, 458
Street Cleaning.....226, 300, 380, 458